

OIL ANALYSIS REPORT

Sample Rating Trend





413003 Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (--- GAL)

SAMPLE INFORMATION method

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Machine Id

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

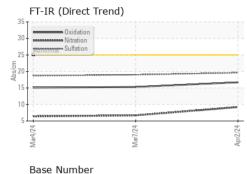
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

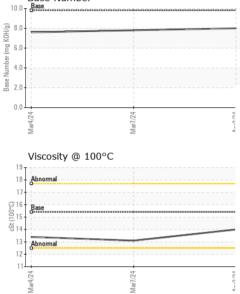
		method	iimit/base	current	nistory i	nistoryz
Sample Number		Client Info		GFL0104442	GFL0104297	GFL0104322
Sample Date		Client Info		02 Apr 2024	07 Mar 2024	04 Mar 2024
Machine Age	hrs	Client Info		1579	1435	1390
Oil Age	hrs	Client Info		600	600	600
Oil Changed		Client Info		Changed	N/A	Changed
Sample Status				NORMAL	NORMAL	NORMAL
-				-	-	
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	0	method	limit/base	current	biotorut	history2
	3				history1	
Iron	ppm	ASTM D5185m	>120	11	8	9
Chromium	ppm	ASTM D5185m	>20	<1	0	0
Nickel	ppm	ASTM D5185m	>5	<1	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>20	3	1	2
Lead	ppm	ASTM D5185m	>40	0	0	0
Copper	ppm	ASTM D5185m	>330	<1	16	15
Tin	ppm	ASTM D5185m	>15	0	0	<1
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	biotomut	history2
ADDITIVES		methou	IIIIII/Dase	current	history1	mstoryz
Boron	ppm		0	3	8	10
	ppm ppm	ASTM D5185m				
Boron		ASTM D5185m	0	3	8	10
Boron Barium	ppm	ASTM D5185m ASTM D5185m	0 0 60	3 0	8 0	10 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	3 0 60	8 0 61	10 0 60
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	3 0 60 <1	8 0 61 0	10 0 60 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	3 0 60 <1 1006	8 0 61 0 829	10 0 60 <1 871
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	3 0 60 <1 1006 1091	8 0 61 0 829 962	10 0 60 <1 871 977
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	3 0 60 <1 1006 1091 1108	8 0 61 0 829 962 788	10 0 60 <1 871 977 956
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270	3 0 60 <1 1006 1091 1108 1351	8 0 61 0 829 962 788 1017	10 0 60 <1 871 977 956 1129
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	3 0 60 <1 1006 1091 1108 1351 3718	8 0 61 0 829 962 788 1017 2593	10 0 60 <1 871 977 956 1129 2728
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	3 0 60 <1 1006 1091 1108 1351 3718 current 5	8 0 61 0 829 962 788 1017 2593 history1	10 0 60 <1 871 977 956 1129 2728 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	0 0 60 1010 1070 1150 1270 2060	3 0 60 <1 1006 1091 1108 1351 3718 current	8 0 61 0 829 962 788 1017 2593 history1 9	10 0 60 <1 871 977 956 1129 2728 history2 9
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	3 0 60 <1 1006 1091 1108 1351 3718 current 5 5 5	8 0 61 0 829 962 788 1017 2593 history1 9 2	10 0 60 <1 871 977 956 1129 2728 history2 9 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Jimit/base >25	3 0 60 <1 1006 1091 1108 1351 3718 current 5 5 2 2 current	8 0 61 0 829 962 788 1017 2593 history1 9 2 4 4 history1	10 0 60 <1 871 977 956 1129 2728 history2 9 2 2 4
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >25	3 0 60 <1 1006 1091 1108 1351 3718 <u>current</u> 5 5 5 2 2 <u>current</u> 0.4	8 0 61 0 829 962 788 1017 2593 history1 9 2 4 history1 0.2	10 0 60 <1 871 977 956 1129 2728 history2 9 2 2 4 kistory2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	3 0 60 <1 1006 1091 1108 1351 3718 current 5 5 2 2 current	8 0 61 0 829 962 788 1017 2593 history1 9 2 4 4 history1	10 0 60 <1 871 977 956 1129 2728 history2 9 2 2 4 history2 0.2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm t ppm ppm	ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >4 >20 >30	3 0 60 <1 1006 1091 1108 1351 3718 <u>current</u> 5 5 2 2 <u>current</u> 0.4 9.2 19.6	8 0 61 0 829 962 788 1017 2593 history1 9 2 4 4 history1 0.2 6.7 19.0	10 0 60 <1 871 977 956 1129 2728 history2 9 2 2 4 history2 0.2 6.4 18.7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >20 >20 >30 imit/base	3 0 60 <1 1006 1091 1108 1351 3718 <i>current</i> 5 5 2 2 <i>current</i> 0.4 9.2 19.6 <i>current</i>	8 0 61 0 829 962 788 1017 2593 history1 9 2 4 4 history1 0.2 6.7 19.0 history1	10 0 60 <1 871 977 956 1129 2728 history2 9 2 2 4 history2 0.2 6.4 18.7 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRAC	ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm % Abs/cm Abs/1mm	ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7414	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >4 >20 30 imit/base	3 0 60 <1 1006 1091 1108 1351 3718 current 5 5 2 2 current 0.4 9.2 19.6 current 16.7	8 0 61 0 829 962 788 1017 2593 history1 9 2 4 4 history1 0.2 6.7 19.0 history1 15.3	10 0 60 <1 871 977 956 1129 2728 history2 9 2 2 4 history2 0.2 6.4 18.7 history2 15.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >20 >20 >30 imit/base	3 0 60 <1 1006 1091 1108 1351 3718 <i>current</i> 5 5 2 2 <i>current</i> 0.4 9.2 19.6 <i>current</i>	8 0 61 0 829 962 788 1017 2593 history1 9 2 4 4 history1 0.2 6.7 19.0 history1	10 0 60 <1 871 977 956 1129 2728 history2 9 2 2 4 history2 0.2 6.4 18.7 history2



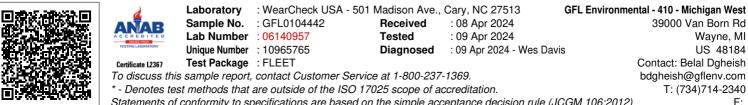
Mar4/74

OIL ANALYSIS REPORT





VISUAL NONE NONE White Metal *Visual NONE NONE scalar Yellow Metal *Visual NONE NONE NONE NONE scalar Precipitate scalar *Visua NONE NONE NONE NONE Silt scalar *Visual NONE NONE NONE NONE Debris *Visual NONE NONE NONE NONE scalar Sand/Dirt NONE scalar *Visual NONE NONE NONE NORML Appearance scalar *Visual NORML NORML NORML Odor *Visual NORML NORML NORML NORML scalar **Emulsified Water** scalar *Visual >0.2 NEG NEG NEG Free Water scalar *Visual NEG NEG NEG **FLUID PROPERTIES** Visc @ 100°C cSt ASTM D445 15.4 14.0 13.1 13.4 GRAPHS Ferrous Alloys 12 ickel Mar4/24 Mar7/24 Non-ferrous Metals 10 14 12 10 ppm Mar7/24 Viscosity @ 100°C Base Number 19 10. 18 (mg KOH/g) ぢ 14 4 Base 13 Abnorma 12 11 0.0 Mar7/24 Apr2/24 Mar7/24 Aar4/74 Mar4/74 : WearCheck USA - 501 Madison Ave., Cary, NC 27513 GFL Environmental - 410 - Michigan West : GFL0104442 Received : 08 Apr 2024 39000 Van Born Rd



Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Submitted By: seel also GFL468 - Laura Wilson